

GOVERNMENT OF INDIA
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

RAJYA SABHA
UNSTARRED QUESTION NO. 2124
TO BE ANSWERED ON 15.03.2021

Impact of climate change on glaciers in Indian Himalayan region

2124. SHRI K. C. VENUGOPAL:
SHRI SHAMSHER SINGH DULLO:
SMT. PHULO DEVI NETAM:

Will the Minister of ENVIRONMENT, FOREST AND CLIMATE CHANGE be pleased to state:

- (a) whether Government has any data or has conducted any study on the rate at which glaciers in Indian Himalayan region are melting;
- (b) if so, the details thereof and if not, the reasons therefor;
- (c) whether Government has done any assessment on the impact of increase in the melting rate of glaciers on the lives of people in adjoining States;
- (d) whether Government has taken any action to mitigate such natural calamities; and
- (e) if so, the details thereof and if not, the reasons therefor?

ANSWER

MINISTER OF STATE IN THE MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE
(SHRI BABUL SUPRIYO)

(a) and (b): The Government is seized of the matter. The glaciers and their characteristics may exhibit complex changes in specific locations such as various sub-regions in the Himalaya. There are stable, retreating, or even advancing glaciers in the Himalaya, thereby emphasizing the complex geographical and cyclical nature of the glacial dynamics. The monitoring of glaciers is pursued by the Indian Space Research Organization (ISRO), Geological Survey of India (GSI), Ministry of Earth Sciences, Defence Geoinformatics Research Establishment and through various research projects sponsored by the Department of Science and Technology. The latter also has an autonomous institution on Himalayan Geology, namely, the Wadia Institute of Himalayan Geology, Dehradun.

As per the information provided by ISRO, changes in the area of glaciers were mapped for 2630 glaciers. Glacier extents for the year 1962 were taken from Survey of India topographical maps on 1:50,000 scale as a reference and that of 2001 to 2005 timeframe was taken from satellite data.

Further, monitoring of change in extents of 2018 glaciers was carried out from IRS LISS III data of the year 2000 to 2002 and 2010 to 2011. The monitoring shows that 87% of the glaciers showed no change, 12% retreated and 1% glaciers have advanced.

The net change in a glaciated area varies from one region to another. In a recent study, 5,234 glaciers were monitored between the years 2001 and 2017 to 2018 across the Himalayan–Karakoram (H-K) region from Kashmir to Sikkim using satellite data. In the Karakoram region (north of the Indus river) gain in the area (0.056%) has been observed in the area coverage of 17903 Km². The loss is observed in the rest of the Himalayan region which varies from 0.751% to 2.32%.

(c): The impact of an increase in the melting rate of glaciers on the lives of people in adjoining States is a complex and evolving subject studied through investigations, data collection and analysis of various case studies by scientists in India and all over the world.

According to the information provided by the Central Water Commission, monitoring of 477 glacial lakes and water bodies in the Himalayan Region of the Indian river basin system, having an area of more than 50 hectares is done on a monthly basis in the monsoon season since 2011.

(d)and (e): While glaciers cannot be protected from receding through direct interventions, the Government has made several efforts to reduce the impact of climate change through several adaptations and mitigation measures that include a number of programmes under national missions on climate change as part of the National Action Plan on Climate Change and actions initiated under other programmes.

The National Disaster Management Authority has issued Guidelines titled “Management of Glacial Lake Outburst Floods (GLOFs)” in October 2020, which inter-alia includes a discussion on Early Warning Systems. However, monitoring, interpreting data and providing specific alerts for hazards in specific locations is a challenging and developing subject, and new scientific issues arise as our data collection and knowledge advances.

Further, relief, recovery, and rehabilitation are governed inter-alia by the relevant provisions of the Disaster Management Act, 2005 and the guidelines, directives, and orders of the National Disaster Management Authority and the State Disaster Management Authorities. The constitutional, legal and administrative provisions relevant to disaster management and disaster risk reduction adequately address the management of disasters in the country.
